I. Waldburg

Terms—Three Dollars per annum, payable in advance.

THE SOUTHERN AGRICULTURIST, HORTICULTURIST, AND REGISTER OF RURAL AFFAIRS,

ADAPTED TO THE

SOUTHERN SECTION OF THE UNITED STATES.

NEW SERIES.—VOLUME IV.—NUMBER 6,

JUNE, 1844.

PUBLISHED BY A. E. MILLER,
No. 4 Broad-Street.

CHARLESTON:
PRINTED BY MILLER & BROWNE,
Old Stand, No. 4 Broad street
1844.

☞ Postage—100 miles 4½ cents; over 100 miles, 7½ cents. Three Sheets, monthly.

CONTENTS.

PAGE

On the Cotton Gin and Introduction of Cotton. Answers to queries of the Hon. W. B. Seabrook of Edisto, S. C. by Kinsey Burden, Esq. of John's Island.... 201

Agricultural Proceedings of the St. Andrew's, Ashley and Stono Agricultural Association, at the Anniversary meeting, accompanied with extracts from the reports of the several Committees..... 208

Remarks on Mr. Ruffin's Agricultural Survey of South-Carolina..... 218

Extracts from Ruffin's Agricultural Survey of South-Carolina..... 220

Guano, or Huano; a letter relating to its properties..... 226

Proceedings of the Black Oak Agricultural Society..... 227

Improvement of Clay Soils..... 235

Experiments..... 236

Cotton Gin—Inquiry..... 237

Use of Grapes..... ibid.

Protection against Drought..... 238

Peach Trees..... 239

Efficacy of Bathing in certain morbid states of the mind..... 240

New mode of Propagating Fruit Trees..... ibid.

The Chicken-hatching machine..... ibid.

Scotch Guano..... ibid.

Terms of the Southern Agriculturist.

Three Dollars, payable in advance;—for two copies $5; Societies and Clubs can be supplied with ten copies for $20, payable in advance.

☞ **The Subscribers to the Southern Agriculturist are reminded, that the Price of the Journal was reduced last year to all those who paid in advance; those who are still in arrears for this and former years are respectfully solicited to make their payments.**

THE SOUTHERN AGRICULTURIST.

(NEW SERIES.)

Vol. IV. FOR JUNE, 1844. No. 6.

Communicated for the Southern Agriculturist.

ON THE COTTON GIN, AND INTRODUCTION OF COTTON.

Answers to queries of the Hon. W. B. Seabrook of Edisto, S. C. by Kinsey Burden, Esq. of John's Island.

John's Island, July 21st, 1843.

Dear Sir,—Since replying to your first letter, I have received your second, under date the 12th of June; and will cheerfully give you such further answers to your additional queries, as are not embraced in the first reply.

Que. 1.—Describe Eaves' gin—when was it invented, and how much cotton could it separate from the seed per day?

Ans.—I am under the impression that I have been informed, Eaves' gin was invented, and used first in the Bahamas, (or French W. I. Islands, where a gin of that kind was "long used;") and was brought by Eaves to Georgia, used there; and then to this State, or nearly simultaneously in both, about the year 1797–1798. I have seen but one or two of the original gins in operation, and I cannot say, from my own knowledge, how much cotton they could separate; but, I was informed about 300 lbs. They however did not answer the expectations of those *who used them, at that time, in this State;* which I have supposed to have been owing more to the careless, or unskilful manner of constructing, and working the propelling power, than to the gin itself, as there appeared to be a defect in that respect, in those which I saw at work. They were, however, thought, in this State, to tear and injure the long staple cotton too much. I consider Mr. Farris' gin, Eaves', with some slight improvement.

Que. 2.—Who sent to Europe the first bag of cotton, and in what year? In what year was it grown as an experiment, and by whom?

Ans.—Your second inquiry, I think has been fully answered in my reply to your first letter; and I believe I am safe in saying, if

any long staple cotton was shipped to Europe from South-Carolina before the joint crop of my mother, and Mr. James King, it was produced in Georgia, or the West-Indies, sent to Charleston, and shipped from thence to Europe; which I know to have been a common practice since.

Que. 3.—How many acres to the hand were planted? And what was the usual quantity of cotton made to the hand?

Ans.—My own laborers usually planted from two and a half to three and a half acres of cotton to the hand, from one and a half to two acres of corn, and about three-fourths of an acre of potatoes.

Que. 4.—Was manure used? If so, what kinds, and in what quantities?

Ans.—I cannot say what was the general practice on these points, I can only speak of my own, and that of some others that came under my notice. I have already said, that I used a compost of lime and cow-dung in 1800; and this was mixed in the proportion of $\frac{1}{3}$ lime to $\frac{2}{3}$ds of the other material—of which mixture about as much as would stand on a hoe or spade, was placed to each hill and chopped up with the earth, so as to be well incorporated with it. In 1826, lime and other materials as stated above. In 1803, I used lime alone. I have also used lime advantageously for corn, root potatoes, wheat and rye. But when oats, and the common field-pea was afterwards planted on the same land, I noticed the oats and peas, blasted on all the spots where the heaps of lime had been laid down. Whether this effect on oats and peas was caused by the earth in those spots having been stimulated to exhaustion by the lime; or, there is something in lime not suitable when applied to those plants, I am unable to say.

Some years ago, I urged two planters who resided in the lime-stone region of this State, to use lime on their exhausted lands, but I have not heard whether they tried it.

I have long been under the impression, that if *lime*, and marl *rich in lime*, (but lime calcined by fire I prefer, as a purifier of the air,) were used freely throughout our State as a manure, that not only would the product of the fields be much increased, but the general health of the inhabitants would be improved, and more so, if connected with *deep drainage*, both open and under, where the land is too quaggy for open drains. This has been the

result with my own plantation on this Island, since I began to drain deep, and limed my lands occasionally, in the course of thirty-six years since, their healthiness has been improved. It has been said by a certain writer, (I think Dr. Anderson,) that sheep pasturnd on lands that have been limed, will never have the rot. This I have proved correct, my sheep have been comparatively very healthy; while some of my neighbors at different times have lost a large part, and others all their flocks by the rot, or some other disease. After liming a field, I have frequently smelled the lime in the wind at a distance. Under the belief of the purifying effect of lime on the atmosphere, I suggested to the mayor of Charleston to strew it freely in the streets, when the cholera appeared there.

In the year 1803, Mr. James King saw me draining the ponds (before this time, the ponds in the fields were not considered worth draining, the custom was to plant to the edge of the ponds, and leave the ponds surrounded with trees or bushes, and thus were many fields seen studed with these clumps, holding water, and obstructing the free circulation of the *air*, so beneficial to the health of the inhabitants, and the crops,) in my field, previous to planting them in cotton, and invited me to go and see what he was doing with his ponds; accordingly I found him carrying the pond-mud into his cotton field as a manure, when I remarked to him, that I considered marsh-mud better, as it contained a portion of salt and lime. Some years after he tried the marsh-mud, and was thus the first to use it as a manure for cotton. I do not recollect the year in which his experiment with it was made. Having to clear land for several years, to make a change of fields, I did not use marsh-mud so soon as Mr. King used it in his fields. Several persons went to see the effect it produced in his fields, and it was soon after generally used. I have heard my mother say, that the year after the great hurricane of 1752, my grandfather's field on Burden's Island produced a most abundant crop of corn and peas; and the increased fertility of the soil was attributed to the overflow of the land with salt-water, and the alluvial deposit. In the storm of October 1804, a part of my cotton-field and corn-field also, was overflowed. The next year both cotton and corn were very much improved as far as the salt-water had covered the land. The Bible, that *only sure guide* to eternal life, also gives us useful hints upon almost every occupation

of man. And thus, whilst Christ was preaching to the Jews, near two thousand years ago, He said "Ye are the *salt of the earth*, but if the salt has lost his savour, *wherewith shalt it be salted*," which shows, that the people to whom he was preaching, were familiar at that time, with the use of salt for their land. My stable is near to the margin of the high land; the manure is thrown in a pile where the spring-tides reach it; for many years I have had the salt-water thrown over it, before it was carted out; from 16 to 28 single cart-loads per acre, of this compost spread over the listing, improves the cotton very much; particularly in cold-black, and grey lands.

The practice of manuring was not generally adopted I believe until after 1806. In 1805-6, I removed to this Island, and at that time the extent of the manuring appeared to consist in moving cow-pens over the potato patches, and using cotton-seed for the corn; but for cotton, a change of fields, and rest to the land for one or two years, the planters, generally, appeared to depend on for a crop; one individual told me he had cured spots of rust with green salt-marsh; another said he had used pine-trash on spots of his weak land with advantage. I manured with compost from the stock-pens in the mode now generally pursued, or with the simple green, or decayed vegetable matter, (as rushes, marsh-sedge pine-trash, &c.) spread along the ground and listed in; or, on the list, and beded on, where there was not much vegetable growth on the land; in the proportion of 16 to 84 single cart-loads per acre. Marsh-mud I have applied in the same proportion, cotton-seed from one peck to two pecks for each row of 105 feet, scattered over the land and listed in; but it was generally used at that time for corn only, and put into the hills?

Que. 5.—Was the plough employed in the cultivation of the crop, as well as in breaking up the land.

Ans.—I have been informed, one or two persons used the plough on this Island after the revolutionary war, but soon laid it aside. The plough was very unpopular in this region with our best planters for many years; the prejudices against it were very strong, until of late years. It was used by my father, and after his death, I saw it in use by my mother's direction; but not again until about the year 1803, when I observed it in use with Dr. John Mitchell of Willtown. He used the Dutch-shovel plough with advantage, and offered me two of that kind, which I accepted and continued to use occasionally;

I afterwards supplied myself with other ploughs of different forms—the bar-shear, for breaking up land with a heavy sward; the narrow bull-tongue, for breaking up stiff clay-land, and tracking out land with, which six acres per day can be done by one man and horse, while with the hoe, the usual quantity for one hand is three acres; also for tearing out joint-grass spots, and nut-grass; a rake-plough to collect the grass into heaps, after the bull-tongue; the Dagon, Freeborn, and half shovel-ploughs for beding land, and partly to attend the crop; and the trenching-plough for small grain. In beding land with the plough, I have found that half an acre can be finished off with the hoe afterwards, with as much ease as a fourth without the assistance of the plough, and that the land was better prepared for the seed. Four acres can be done with one plough to throw up one furrow on each side of the bed, after the plough; one acre to the hand can be done, to haul up the bed, and hill the cotton or corn.

Que. 6.—How often was the crop worked, and how late in the season?

Ans.—This depended on the faithful manner of doing the work; whether the season was wet or dry; whether the land planted was new, or had been at rest one or two years; or land that had been cultivated annually. If the work was faithfully done, the season dry, and the land fresh, the grass was less, the plants grew faster, and shading the land sooner, required less work, and the crop was laid aside sooner. If otherwise, the plants grew slower, were more subject to the depredations of grubs and bugs, and it was more difficult to get an early good stand of plants. There was also more grass to contend with, especially if grass or weeds had been permitted to go to seed in that field the preceding year. My rule has always been to work the crop while there was grass to take out. After the pods begin to form, and the lateral roots to shoot out from the tap-root, it is ruinous to the crop to hoe deep. If the cotton is tall, it is safer to pull out the scattered grass, weeds and late cotton with the hand; the earth shake cleanly off, and place them in hands-full on the top of the bed between the hills, where they will soon rot down, and add something to the growth of the crop. In the year 1812, I visited my plantation at John's Island, about the first of September, when there was a tolerable blow of cotton on the lower arms. I found my driver had not finished his last hoeing, 12 acres being left; the field

was wet and the grass was small, and chiefly in the alleys. I ordered him therefore, to break off, and put the people to gather the cotton that was open. At the end of the year, the line was distinctly marked where the hoes were stopped—the cotton not hoed, became very grassy, the pods were small, and produced but little.

Que. 7.—Were the ridges made permanent, or changed as often as the cotton was planted? Were they large or small, narrow or broad?

Ans.—The general practice was to change the ridges as often as the land was planted, with some few experimental exceptions; one in 1802 I have already given you. The ridges were generally made broad and flat in high land; large and high in flat land, and finished off large and high in both, when the crop was laid aside, forming the sharp edge of a triangle in the centre of the alley; but it was not always that the overseers or drivers obeyed this order, and there were some deviations from this rule, by individual planters themselves.

Que. 8.—What were the usual prices obtained?

Ans.—I have already given you the answer to this in my first, and in the preceding part of this letter, in extracts taken from my plantation books, and other notes.

Que. 9.—Was it the practice to reject all cotton covered with fur, or down, and to preserve only the pure black-seed?

Ans.—The general practice, until about the year 1826, was to wray off all the coated seed, and reject all but the black-seed.—Since 1826, many persons planted the coated seed; I planted it myself for several years, but found it too troublesome, and laborious to gin out, and have again rejected it.

Que. 10.—Did all planters get the same price? If not, was the difference attributable to preparation, or superiority of staple?

Ans.—All persons who cleaned their cotton well, obtained the same price for several years after the introduction of cotton as a crop; but afterwards the purchasers began to discriminate. The cause of difference was two-fold, it being in some cases attributable to the cleaning, in others to the superior staple, and in some to both causes.

Que. 11.—How were the bags packed? Was the screw resorted to? Was the green-seed cotton packed with the pestle?

Ans.—Both green and black-seed cotton was packed with the pestle for several years, afterwards the screw was resorted to *by large planters*, for the green-seen cotton.

Que. 12.—Was the ginned cotton well prepared for the bag? Was the whipper used?

Ans.—The ginned cotton by some planters was well prepared; by others it was not well prepared; some prepared it by switching it on a square net fixed on a frame, others used a small *rude* whipper with one barrel—others used neither. I projected an improvement on that whipper, which was executed for me by Mr. John Bernie; the double drum whipper now in common use. I gave him the benefit of the improvement, and paid him fifty dollars each, for three of them which he made for me.

Que. 13.—What was the daily task of a laborer with the hoe, making the ridge hoeing? or were the negroes worked in gangs?

Ans.—In listing land, if the land had a heavy sward, the task was one fourth of an acre; if only one year at rest, and lighter, one-third of an acre; if it had been cultivated the year before, half an acre; unless there were in it large cotton stalks, or there were some other good reason for deviating from the general rule. In ridging, one fourth of an acre was done, unless the plough was used. In hoeing half an acre.

I have only worked the people in gangs, when planting and gathering the crop. I have heard of some individuals, planters, working in gangs, but I believe it was practised by very few.

Que. 14.—What was the weight of the bags?

Ans.—I have taken from an old weight book of Messrs. R. & T. Burden, Factors, for the year 1803. The average weight of the cotton bags of 28 planters, myself among them, and found it to be 258 27–28, which was about the fair average weight of the cotton bags about that time. I have also given you among the the preceding extracts a later average of my own cotton bags for 1807, 302 6–46 lbs.; in 1808, 275 10–27 lbs.; and in 1809, 375 13–26 lbs. Other crops have probably been packed in the same rates.

Que. 15.—What were the diseases of the cotton plant? Did any insect depredate on the cotton plant? If so, enumerate and describe them?

Ans.—The common rust, caused by an impoverished soil, and in some cases, by the opposite extremes of excessive hot dry; or exces-

sive wet weather, prevailed very much, and was the only formidable disease the cotton plant was subject to for many years. There was, however, another disease less extensive, which some planters named the "blue rust," and which was devoloped in what are called "alum spots." Latterly "the yellow leaf" has been noticed,—a disease more formidable than either of the preceding; in some seasons prevading every part of the field. It commences with the long leaves turning yellow, and falling off, and the whole plant becomes diseased: It may properly be denominated the "canker." A partical canker also, produced by external injuries to the cotton plant in its young state, which corroded, and caused the plants to break down near to the ground.

Among the depredating insects, I mention the grasshopper, which in some years is very numerous and destructive to the cotton, while in its young state; the very small insect generally called the bug; the cut-worm, and the caterpillar described above.

Que. 16.—In what year did the caterpillar first make its appearance, what was the danger done? Is the caterpillar the same worm that depredated on the indigo plant:

Ans.—This question is answered in the extracts given of the crops of 1802, 1804, 1822, and 1825, in the preceding part of this letter.

I have found it impossible to circumscribe the information you have requested, within the concise compass you have mentioned, to make the account intelligible; I have therefore, been more prolix than I wished. Your third letter has been received, and will be replied to. I have no objection to your publishing my first letter.

Respectfully, your ob't, serv't.

KINSEY BURDEN.

To W. B. SEABROOK, ESQ.

AGRICULTURAL PROCEEDINGS.

St. Andrew's, April 20th, 1844.

My Dear Sir:—According to a resolution of the St. Andrew's, Ashley and Stono Agricultural Association, I herewith send you for publication in the Southern Agriculturist, a copy of their proceedings at the Anniversary meeting held at the Club house, on Thursday, the 4th inst., accompanied with extracts from the reports of the several Committees.

If agreeable to you, extracts from the quarterly reports will be continued to be sent for publication after each meeting, with such matter as may be interesting to the planting community.

Very respectfully,
Your obedient servant,

FRAS. S. HOLMES,

Cor. Sec'ry. St. A. A. & S. Agricultural Association.

To the Editor of the Southern Agriculturist.

SECOND ANNIVERSARY OF THE ST. ANDREW'S, ASHLEY AND STONO AGRICULTURAL ASSOCIATION, APRIL 3D, 1844.

A large number of members and invited guests being present, the Association was called to order by the President, who addressed them in a neat and happy manner. The minutes of the last meeting was then read, and disposed of according to the 4th Article of the Constitution. The election for officers was next in order, which resulted as follows:—

JOHN S. BRISBANE, *President.*
Hon. JOHN RIVERS, *Vice-President.*
F. S. HOLMES, *Corresponding Secretary.*
J. H. MAGWOOD, *Recording Sec'ry. and Treas'r.*

Standing Committee.—R. Izard Middleton *Chairman;* E. C. Peronneau; A. R. Haig; John A. Ramsay, Geo. Haig, and J. H. Magwood.

Stewards.—F. S. Holmes, and J. A. Ramsay.

Delegates to Annual Convention of State Agricultural Society at Columbia.—W. J. Bull, and R. J. Middleton.

The reports from the various Committees were then read, (extracts herewith sent,) and afforded much pleasant and instructing discussion, after which the Association adjourned that the members be allowed time to examine the stock, and other matters which were exhibited, and take a short recess before dinner.

This being the first attempt to get up an exhibition, many were prevented sending for fear of being the only ones, but no doubt our next exhibition will be better supplied, judging from the frequent remarks—"If *I had thought* there would have been an exhibition, I would certainly have sent my Berkshire boar—and I, that fine sow with her litter of half Bershire and half Irish graziers; and a third, my Bakewell ram and ewe, and that fine Ayrshire heifer of mine," with many other expressions of the like kind, showing the interest it had excited. No doubt that an award of medals or cups will do much more, and these undoubtedly will be given as soon as the Association can afford them.

The most important exhibited are as follows :—

Bakewell Ram, one year old, from the original stock of Hugh Wilson, Senr. Esq., the property of Jos. F. Bee, Esq. Highly commended by the Committee.

Half Bershire and half Irish grazier pig, 8 weeks old, the get of a Berkshire boar imported by W. J. Bull, Esq., out of an Irish grazier sow, property of the Hon. John Rivers. Highly commended.

Bay filly, the property of John S. Brisbane, Esq., by Mercury, out of a mare of the Little John breed, she is two years old this spring. Much admired and commended.

Sorrel filly, 5 years old, the property of Jos. F. Bee, Esq., bred and raised at Ashley River. Highly commended.

Mr. E. C. Peronneau, presented an uncommonly large red-top turnip for inspection.

Mr. F. S. Holmes, a show of large London leeks, which were uncommonly fine in appearance *and flavor*, as the Society testified at dinner.

Capt. J. H. Magwood, presented a specimen of fire-brick of his own manufacture, composed of equal parts of sand, clay and marl, and burnt in the kiln with the ordinary brick—these bricks have been tested in the furnace of an extensive foundery in the city, and were found equal to the imported English. Highly commended, and the color and fine shape much admired.

Mr. John A. Ramsay, presented a specimen of lime manufactured from marl. In the preparation of the kiln and burning, he was assisted by Mr. J. P. Clement, his neighbor. The marl contained about 70 per cent. of carb. of lime. It took a half cord of inferior pine wood cut last summer, to burn two cart loads of marl say 12 bushels, which turned out 4 barrels of lime. The kiln was commenced to be built in the morning, and was done burning by night. The lime has been used for white washing, and also as a cement, and pronounced equal to that purchased in the city of Northern manufacture. The Committee were much interested in these specimens of brick and lime, and highly commended them to the notice of the Society, as being the first to their knowledge ever manufactured in this Parish.

Mr. F. S. Holmes, exhibited several large specimens of marl, and a numerous collection of fossils, taken from his marl pit, and the marl bank of Ashley Ferry. In his collection of shark's teeth, which comprises no less than two hundred and thirty-four, all in a beautiful state of preservation, and many of the brightest polish, are to be found several very large ones—the heaviest weighs over half a pound, and measures $5\frac{1}{8}$ inches in length, 3 inches in breadth, and $6\frac{3}{4}$ inches in its girth around the widest, whilst the smallest is not more than an eighth of an inch in length or breadth, and does not weigh more than 3 or 4 grains. Not many of the latter size are to be found in this collection, but the average is from one to 3 inches in length. Numerous fish bones, shells of the muscle,

claim, periwinkle, barnacle, oyster and conks, and many others not known, comprise this interesting collection.

One of these fossils is quite a rare and singular one—in shape it resembles the back of the terrapin—of a bright black polish on the top, and a small yellow ribbed substance coating the under part. In some places it is over an inch think, and of a hard flint-like substance.

This collection was much admired, and afforded some interesting subjects for remarks and conversation. The Committee award much praise to Mr. Holmes for the diligence and skill used in collecting these specimens, and tastefully arranging them for the inspection of the Association.

After reading the report of the Committee on exhibitions, on motion of Hon. John Rivers, it was

Resolved, That the Chairman of the exhibiting Committee be authorized to issue premiums to such as the Committee recommend, and that the Secretary be authorized to purchase ten copies of Seabrook's Memoir of the Cotton Plant.

The Society with its invited guests then sat down to a table well furnished, according to the rules of the Association, with a pic-nic dinner, each member contributes his dish, which is placed in the hands of the stewards, and by them arranged on the table.

Extracts from the reports of the Standing and Visiting Committees.

Commencing two years ago with our roll not sufficiently large to fill the "Standing Committee," we now number no less than thirty-eight members, a large portion of whom evince much interest in the success and welfare of our infant Association. Many who foretold our downfall at that time, are now to be found amongst our most zealous members, and even excell in their exertions, those who were the prime movers in the organization of the Society. We may be allowed therefore to congratulate the Society upon its bright prospects?

We will not pretend to speak of the *great* good we have been instrumental in doing—but that a general improvement is quite apparent, the members of this Committee will each testify.

Where the work was formerly left entirely to the superintendance of a negro driver, we in most cases find the proprietor giving it his personal attendance.

Where the pens and stalls were badly littered, the cattle wallowing in mire, and the manure carelessly exposed and wasted—we now find the first well covered with beds of marsh, rushes or leaves, and the latter husbanded with a misers' eye, thereby causing goodly numbers of cart-loads to appear in the report of the visiting Committees, and the length, breadth and depth of the corn-crib increased.

Where the ditches were performing serpentine routs around every stump that perchance intersected its course—now *Irish-like* will bare the test of the compass and rod.

Where the gardens with broken fence, and a row of cabbage-stalks, which were carefully preserved for sprouts in spring time, to contribute to that dainty dish of the bad gardener pepper-pot, was seen—now with white-washed palings encircle the snowy cauliflower and beds of fragrant herbs.

And where the dairies were made store-rooms and slaughter houses in which all of the pork was cut up and cured. The poultry houses with ragged roof and broken wall, through which the wild cats were treated to a Christmas turkey, or fat spring capon—now all vieing with those of Lebanon or Quaker celebrity—surely then we should be greatly encouraged in our exertions, and no doubt in time we will see greater results, and certainly reap great rewards.

The visiting or Sub-committees began their rides on the 27th of March, and finished on the 1st of April—one Committee visiting the upper, and the other the lower divisions of this parish. We find a majority of the planters, planting cotton and corn, and are well advanced in the business, unlike the up country planters who appropriate all the manure to the corn crop, and little to the cotton. Our planters manure the cotton crop generally first, giving the corn such coarse and long litter which could not be well applied to the cotton—and most of them having much rich low bottom-land, which, by judicious drainage, produce fine crops of corn without manure. On looking into the returns from each plantation, we find the following manures as being generally used. Compost from the cow-pens, which are littered with leaves, marsh and rushes—the same from the stable; and in many cases we find the winter-pens for cattle are placed next to, or near the stable, and the manure from the latter is spread at intervals over the former, and is thus well trampled and mixed by the feet of the cattle. Compost from the hog-pens form a considerable item in the returns of many places, and seems to be much prized for the potato crop.

Green marsh and rushes spread in the alleys at the rate of 8 to 16 cart-loads per acre, and listed in early in the winter, have proved very beneficial—and though generally used for the cotton crop only, have yielded great returns in corn and slip potatoes.

Swamp and pond-mud have been used to some extent on several plantations, but little improvement seen, unless it had been well exposed in order that it may loose its acidity.

Marsh-mud at the rate of one cart load, applied under the list of each row, (105 feet long,) is highly valued for the cotton crop—is also very fine for slip potatoes.

Cotton seed is the most valuable of all substances at the command of the planter for manure, and is applied in various ways, some preferring to use it in a live state, whilst others destroy its germinating qualities before its application. Mr. E. C. P., a member of this Society, places it in a hole dug in the marsh on the margin of the highland, and over which the tide daily flows—it is prevented from floating by being well covered with a layer of the

mud, which was taken out on making the hole; after remaining some 10 or 15 days, it becomes almost putrid, and emits a very disagreeable odour, and on taking it out is well mixed with the mud, thus forming an invaluable manure.*

To corn, cotton seed is generally applied in a live state, by placing a handful around each stalk or hill, and covering it with earth; after it comes up, it is chopped with the hoe before hauling the earth over it, or the plough throws the earth up to the corn, covering well the cotton plants.

Leaves and woods, earth or scrapings of the woods, have been used to great advantage by some of the planters, and generally applied under the list.

Manuring in the summer by moveable pens is much practised by our planters, and in most cases the land is planted in potatoes the first year after. The pen which is in size according to the number of the stock, is removed every third or fourth day—and by some the land is immediately listed in—but others, and perhaps a majority, do not list until ready to prepare their land for planting.

Corn and cotton are generally planted in separate fields, but Mr. E. C. P., the member above named, plants every fourth row throughout his cotton field in corn. On James Island, where there is not much low corn-land, the planters put corn in every fourth or fifth alley of their cotton-field, and their opinion is that it protects the cotton in high winds.

We find a majority of the planters begin from the 15th to 25th of March, by planting about half of their corn crop (the highland part) first, and then after finishing the cotton planting, the balance of the corn, or the low land part is put in.

Potatoes are put in about the first week in April, though many plant in March.

Oats are planted in February, and for the most part drilled at the rate of $1\frac{3}{4}$ to 2 bushels of seed per acre—when sown broadcoast from 2 to $2\frac{1}{2}$ bushels of seed is used. Oats are commonly planted on the potato land of the last year, and seldom receives any manure.

Irish potatoes.—Nearly every plantation cultivates two or more acres of Irish potatoes, which are placed on the top of the manure that is spread in a furrow made with the plough. In some places the sets are put on a slight list made by the hoe in the last years' cotton field—and the manure which is seldom stinted, is lavishly spread over the whole, and then covered with earth which makes a small bed, and this bed is enlarged at each working, which is not often more than two.

Fruit.—Peaches, pears, apples and strawberries, are to be found on most of the plantations, and all, with the exception of the apple, yield well.

* Would it not be as well to try Boomer's method of decomposing.—EDITOR.

The following is an extract from the return of a member:

"At present I have ¾ths of an acre in strawberries, which promise a fair yield this season. I renew by replanting one-third of my patch every year, by doing this I never have beds over 3 years old, as I find them to bare badly after that age. The land being well ploughed, cross-ploughed and harrowed, so as to pulverise the soil to a good depth, the rakes are passed over it, and all the old roots, stubble, &c., are taken off. At the distance of two feet a part, I stretch a line where the row is to be made, and with a pointed stick mark the ground all along the line, the hands then follow and spread old pond-mud (at least 1 year old,) about 3 inches deep and wide on the mark; a little ashes is then lightly spread over the mud, when the hoes follow and cover with earth, making a small ridge. On this ridge the plants are placed 10 or 12 inches apart: no after cultivation is necessary but to burn them off every February: no hoeing, no weeding, or hauling, or stirring the earth.

At the end of the third year the ground becomes entirely matted, after which they do not produce large fruit. September and October I find to be the best months for making new plantations, but I have never failed if planted in February, and manured and cultivated as above. My planting this year was on the third of February, they are now filled with blossoms and green fruit, (March 27th.)

Unfermented manures are unfit for strawberries, they produce large leaves and plants, but little or no fruit. I have never tried cotton seed. Fifty-two quarts at one picking is the largest quantity I have ever gathered, and this was from a quarter of an acre.

Land which will yield 20 bushels of corn per acre is about the right quality for producing fine strawberries, but if the land is too rich you will have a fine crop of leaves, but small and indifferent fruit."

Marl.—On a number of plantations of this parish rich beds of marl have been discovered, and the Committee regret to report so few persons engaged in applying it to their lands. As far as we can learn, but six planters on the Maine have commenced operations with marl, viz: J. S. Brisbane, J. P. Clement, J. A. Ramsay, F. S. Holmes, J. H. Magwood, and Judge Frost. The two last named gentlemen convey it in boats and flats from the marl banks some distance above. Mr. Ramsay, on the river, and Mr. Holmes, about 1 mile inland, on a creek which falls into the river, each have a good force digging marl. There two pits have been visited by the Committee, and they afforded much interesting matter for comment and admiration.

The following is taken from the return of Springfield plantation, the residence of Mr. Holmes.*

"Since the last visit of the Committee, I have been fortunate in discovering in three different localities good beds of marl, no doubt

* These returns are by a resolution required of each member of the Society upon the quarterly visits of the Committees.

all are of one and the same bed, and must underlay the whole plantation. In the low bottoms it approaches within 4 feet of the surface, and in the highest land is estimated to be from 12 to 20 feet from the surface. The circumstance which led to the discovery of that into which I have sunk a pit, was simply finding two large sharks teeth upon an old causeway which has been thrown across the Church creek, which passes through the plantation. These teeth are quite abundant in the marl beds of the river, and I concluded that marl could not be far from the surface.

I accordingly dug a hole some 3 feet square in a small gall or branch which leads from the creek, and struck the bed of marl at about 4½ feet from the surface. I immediately proceeded and laid out a square of 20 feet for a pit, throwing the earth which was taken out so as to form a bank across the gully, and prevent the tide at high water entering the pit. With two fellows, prime hands, I began on Monday, the 26th February, to remove the top soil in this pit, and the labor was not greater than ditching in a fair soil; but upon reaching the rocks, (a layer of about 1 foot thick intermixed with stiff blue clay,) the pick axe had to be used, and with much labor, to loosen it sufficiently to allow its being taken in the shovel, and after it had been thus loosed was with great difficulty handled. I can give you no better idea of the labor of removing this strata, than by saying it took as long to remove it, as to dig and remove the whole of the other four. I finished on Friday, at 1 o'clock, taking nearly five days; during which time no rain fell, and the pit was ready for working the next day. The following was the result:—

No. 1.	Strata of marsh mud, - - -	1 ft.
" 2.	" " white sand, - - - -	0 3 inches.
" 3.	" " marl-rocks (closely embedded in stiff blue clay,) of very irregular shape, filled with holes, and the prints of shells and small clams—in size seldom, larger than a whole-brick, but generally about the size of a man's fist, -	1 ft. 3 inches.
" 4.	Dark sand, blue clay and pebbles, -	1 ft.
" 5.	Blue and grey sand, with a large quantity of finely divided shelly matter, and numerous muscles, clams, and other shells, (these are entirely decomposed, but retaining their perfect form and shape,) and also shark's teeth of various sizes and shapes, - -	1 ft.
	Total, - -	4 ft. 6 inches.
" 6.	Marl of a brown or dark color, which by analysis of Dr. Lebby, of James Island, contains 71 per cent. of carb. of lime—after penetrating about two feet into this bed, the color of the marl changes to a dingy green, and contains 60 per cent. of calcareous matter.	

Into this bed I have dug 5 feet; 7 feet from the top of the marl, and about 12 or 13 feet from the surface of the marsh or top soil; the strength of the marl is still 60 per cent.

The bottom of this pit is 7 feet below the level of the bottom of the creek which is dry at low-water; this led me to suppose that the bed of the creek was upon the top of the marl, and upon examination found the marl covered with a little soft mud, or sediment.

I have been troubled but little with water in working this pit. Water oozes slowly through every part of the marl, but so gently as to be rather beneficial than otherwise by keeping the marl moist, thereby rendering it more easy to dig and break with the grubbing hoes—a slight blow from which crumbles it perfectly.

From an oversight in not raising the inner or check dam, (which keeps the surface-water from the highland back, and prevents it running into the pit, the water passing through a small trunk which has been placed under the causeway,) the tide at high water just after heavy rains on the 16th and 17th of March, rose through this trunk, overflowed the check dam, and filled the pit completely with salt water. By this accident I had 4,500 cubic feet of water to remove before I could continue my marling.

With a pump and four buckets constantly at work it took nearly two days to get rid of it. I found by actual test that the pump with a mouth of 1⅞th inches diameter, did not vent more water than one bucket and a half would; or, in other words, three buckets baled twice as much water as the single pump would throw. The pump is a good one, worked by two fellows, who take it by turns, one resting while the other is pumping. This test was tried when the water was about three feet below the level of the banks and causeway over which it had to be conveyed, and rods had to be attached to the bucket to reach it—before this, when a hand by stooping could dip up the bucketful, no doubt the bucket surpassed the pump, or was equal to it.

In order to facilitate the business of baling or drawing the water, I erected a scaffold across the top of the pit—placing a trough (made by nailing two boards together,) so as to extend from over the middle of the pit to the outside of the embankment or causeway, raising the inner side so as to give it a gentle slope. The hands standing on the scaffold on each side of the trough and immediately over the water, could with their buckets tied to long and light poles, draw the water without stooping, and with little or no labor; and thus a continued stream was kept up by four buckets, which from appearances seemed to be four times the quantity of that delivered by the pump when worked by a fresh hand.

The pump if worked steadily by one hand is very laborious and exhausting, and the hand ought therefore to be frequently changed, the bucket is not at all so.

The pump can only be used for a certain depth according to its length—the bucket with a suitable pole attached can be used to a very great depth.

And on the whole, the cost of the pump, the labor of working it, and the small quantity of water it vents, makes the bucket, in comparison, so much more simple and economical, and of greater utility.

If no rain falls, it does not take more than 10 minutes every morning to bale out the little water which comes into the pit the night previous.

At the depth of thirteen feet, the prime hands, with one toss of the spade, throw up the marl to the top of the causeway where the carts are loaded; one hand, an old fellow, assists in loading, and while the carts are away, with the butt end of his hoe breaks up the lump, and hauls the marl into a heap."

In conclusion, your Committee would remark, that the weeds and grass of our planting land which is destroyed by our cattle, would afford a richer return to the soil, than what is now restored it from the compost-pens, and it is hardly to be questioned that the amount we realize from our stock is but a poor compensation for the loss we sustain in our crops from this cause. Most, if not all of the planters in this parish, have wood and waste-lands sufficient, with the offals of their plantations, to keep a stock large enough to supply them with all the comforts arising from the dairy—and for making, if judiciously managed, no inconsiderable quantity of compost.

Your Committee are persuaded that the subject deserves the serious considera'ions of the members.

Several interesting experiments have been made this season with marl. Mr. Holmes' marl-land which failed (by rust) in producing cotton the last year—planted again in cotton this year, leaving a small part without marl. He has also tried sweet potatoes, Irish potatoes and corn, with about 130 bushels of marl per acre. He expects to marl his whole slip crop. Mr. Ramsay has marled a larger number of acres than any other individual in the parish—and no doubt every planter who can conveniently do so, will not fail to visit and examine the crop this summer. A field of about 25 acres of land lately cleared, the location of which is on a high sandy ridge, and about one mile or a little more from his marl pit, has been marled this winter—and in the same field is one acre which was marled the last year—the whole of which has been planted in cotton, reserving a single acre, and that planted in oats. A portion of his corn and Irish potato crop have also been marled.

We may therefore anticipate a report on these matters at the next quarterly meeting.

[The Address by the President, J. S. Brisbane, we defer to our next Number.]

For the Southern Agriculturist.

REMARKS ON MR. RUFFIN'S AGRICULTURAL SURVEY.

The term "marl" has been so vaguely used by many writers on agriculture, designating almost every earth a little dryer and firmer than ordinary, that Mr. Ruffin agrees with modern authors in considering carbonate of lime in such earths, essential to constitute marl. The earth called marl in New-Jersey, and found so highly beneficial in agriculture is therefore not marl, as it does not contain a particle of lime. It is more properly designated green sand from its dark green color, and contains potash, magnesia and clay, each in the proportion of about 7 per cent., and to these conjointly, it is believed to owe its valuable properties. It contains potash and magnesia jointly 14 per cent.—this is precisely the proportion of potash in wood-ashes, and all agree in the value of ashes as a manure, both singly and in conjunction with stable manure. Here, then, is another manure within the reach of every planter in every part of the State, and of the utmost value in our peat sour-lands. Wood-ashes is then a manure which experience and analogy designate as equal to the celebrated green sand. By offering a small compensation to the negroes, all the ashes formed on each plantation would soon be added to the mass of manure, and in some parts of the State *wood is now cut down and burnt solely for this purpose.* But green sand has been discovered by Mr. Ruffin in his searches after marl, in several parts of this State also; and no doubt can exist that much more of it will be brought to light, by the inquiries and investigations set on foot by the different Agricultural Societies. Mr. Ruffin discovered it in several places on the Santee, between Stout's Creek in Orangeburg, and Lenud's Ferry in St. Stephen's Parish, and this alone is no trifling result from his labors and researches.

The sudden appearance of large springs, as at Mr. G. H. Smith's on Goose Creek, and at Dr. Henry Ravenel's, and at Eutaw in St. John's, Berkley—the sudden disappearance of streams of water in the earth, and their re-appearance at various distances from the places of their sinking, are well known occurrences, also in Georgia and Florida—all indicating a limestone country.

Four beds of gigantic oyster shells are also described by Mr. Ruffin, and we think that he has overlooked at least two others, but

may be misinformed. He also speaks of minor calcareous deposits: of the immense banks of dead shells all along the coast: of the Indian mounds of shells in most of the rivers and inlets, and of the numerous beds of burnt shells, the remains of the lime-kilns, which border the sea-shore, particularly in Charleston District.

In page 34, he speaks of a "deposite of recent shells upheaved" at Laurel Hill Bluff, on the Waccamaw river, embedded in coarse and loose sand. The mass is exposed in the lower eight feet of the washed and steep bluff, and presents quite such an appearance as may be supposed would exist in the upper sands of the bottom of the ocean near the shore." He continues to observe—"This formation though a matter of curious interest, is of no practical value, because of the small quantity, and also poor quality of the body." This is certainly "a matter of curious interest," and if we are correctly informed, it is also a matter "of practical value." We are told by a very respectable neighbor that such deposites are as numerous on that river, as the Indian mounds of shells are in many parts of the sea-coast; that in the aggregate the quantity is very considerable, and in their scattered situationsare the more likely to be profitable and convenient to the different settlements. Mr. Ruffin probably heard of only the one deposite, and had not time for further searches. The ques tion recurs how did recent shells get there, and that too eight feet above high-tide in the steep bluff of a fresh-water river. The shells at Vance's Ferry are not similar, they are antique, not recent, and were probably "upheaved," but where is there a similar case of recent sea-shells upheaved 8 feet above high water, and at such a distance above salt-water. We know not of any, and therefore doubt of their having been upheaved as suggested.

Can any other suggestion afford a probable explanation of this singular circumstance. We beg the attention of your readers for a few minutes, while we offer a suggestion or two, that may be more curious than useful. It is well known that breaches have existed on different parts of our sea-coast, which are now filled up by the drifting and washing of the sea-sands. One on Sullivan's Island, and one or two on Morris' Island, and the Canal over North Island have thus been filled within the memory of many now alive. May we not without much "fancy" believe that such a breach or inlet for sea-water, once existed across the narrow neck of sandy land, between Waccamaw river and the sea-shore. That it may have

been at Oakley, or Murray's inlets, or at the Swash, or at some other place, but probably at Murray's, passing through by the Club-house, and forming a salt-water bay covered with oyster banks, and the resort for Indians in all that neighborhood. That this inlet was obstructed and closed by nature or design, and that the adjoining salt-marches became inland swamp. Let our readers then extend their eyes up the Waccamaw river to its source, the Waccamaw lake in North-Carolina. This is represented to us as a large and beautiful expanse of water, the depth of which we did not learn; but were told that it was surrounded *by highlands, of more than ordinary elevation.* The presumption is strong, that these highlands were once the margin of a much larger and much deeper lake: that in some long continued and excessive falls of rain, the enclosed water burst its barriers; or in some convulsion of nature a chasm was rent in its western border, and a tremendous inundation spread over the present valley of Waccamaw river; that as it continued to flow, a wider and a deeper bed was excavated in that of the late slugglish tide-water. That this tide-water was still brackish or salt-water, as there was then no other head of fresh-water except the Peedee. That the salt-water flowed much higher up than at present. That the torrent rushing along the Bluff at Laurel Hill, made the bed of the river so much deeper, as to leave the mass of *recent Indian shells* eight feet above tide-water on the side of the Bluff, to the wonder of all who see it. If our conjectures be well founded, this deluge was no doubt destructive to some of the Indian villages; but how vastly beneficial to the South-Carolinians in affording them a great extent of very valuable rice land, not surpassed if equalled by any in the world!

We continue our extracts from Ruffin's Agricultural Survey:—

Marl and Marl-Stone of the Peedee Bed.—Though this formation is separated from the miocene marl (or middle teriary,) in the geological series, or in regard to age, by the interval of two entire periods, or intervening successive formations, (the newer cretaceous and the eocene or lowest and oldest of the tertiary, both of which are here entirely wanting,) still the former two are so united in position, near the Peedee, that it would be difficult to describe either alone, without referring continually to the other. Therefore, in the description that will be given of the secondary or Peedee bed, the overlying and connected bed of miocene marl will be also embraced, so far as regards its position and visible thickness of the stratum; leaving its other characteristics to be considered separately, as part of the whole miocene formation of the State.

It is the secondary formation in that vicinity only, to which I give the name of the *Peedee bed*. This peculiar formation is known as low on the Peedee river as Britton's ferry, at the line dividing Georgetown and Williamsburg Districts; though I could not see it there, when sought, because of the height of the river, (6 feet above low water,) at the time of my attempted examination. It may probably be traced still lower down the river. The surface of this bed rises as the river is ascended. At Williams' bluff, a little above Port's ferry, and fourteen miles above Britton's, the marl-stone only was there seen, and was three feet above the water. On Gibson's land, next above, and stretching along that long bluff for a considerable distance, the secondary marl of dark grey color, was seen eight feet above the then height of the river, above which, for an additional height of several feet, is yellowish marl-stone, also secondary, which there presents a regular horizontal ledge or shelf. The softer marl below is there much poorer than generally higher up the river. Along a higher part of the river bank of the same plantation, the secondary marl disappears, or dips so low as not to be there visible above the water; the whole space, and ten feet or more in height, being occupied by the miocene marl, which there first comes into view. At Godfrey's ferry above, the stratum of miocene was then more than twenty-five feet of visible thickness above the water, and no secondary marl to be seen beneath. At Giles' bluff, (Mr. Henry Davis' land,) the marl and marl-stone of the Peedee bed, in alternating layers, rose to fourteen feet above the then height of water, having an addition of twelve feet thickness of the yellow miocene marl super-imposed. At Witherspoon's bluff, two or three miles higher, the Peedee bed was again out of sight, and the miocene showing about eight to ten feet high. Proceeding still higher up the country, and near the river, the Peedee bed only is seen at sundry points of exposure. At Birch's ferry, twenty-seven miles above Britton's, the Peedee bed was ten to twelve feet above the river, and was exposed for 150 to 200 yards. The stratum of miocene marl had doubtless thinned out, and had come to nothing some miles below this place. The next exposure seen above, of the Peedee bed, was on Myers' land on the steep hill-side of a stream which empties into Jeffrey's creek, a branch of the Peedee river. There the soft marl and very hard marl-stone are of the like dark bluish gray color, as usual with this bed, and they alternate in distinct horizontal layers, varying from nine to twenty-four inches thick—the marl being in the larger proportion. Here the whole thickness of the bed was seen, and found reduced to ten feet; for its underlying stratum was seen exposed several feet deep. This is a black shale, (or very fine clay,) cutting as smooth as hard soap, and though apparently in a solid mass in its bed, is in thin layers, which easily separate and afterwards crumble in drying. It is not at all plastic, or yielding like clay. It shatters under the stroke of a digging implement, even when moist in its bed. The lower part here exposed

has its thin layers alternated with much thinner layers of loose and open silicious sand. This earth, of such marked and peculiar texture and character, is very abundant in this part of the country, and as high as Darlington Court-House, and is vulgarly and improperly called "soap-stone." The secondary marl here lies immediately upon the shale, without any very distinct line of division. At Bigham's alone, below, some shale is seen above the marl, and the one seems to shade away gradually into the other. The Peedee bed of marl is also seen at various places on Willow creek, nearly to its source, which furnishes evidence of at least ten miles width of the bed west of the Peedee. Its most nothern known exterior is on the land of J. A. Jolly, Esq., about a mile above the mouth of Jeffrey's creek, and not far distant from the river.

It had long been reported, and has been so published in agricultural papers, and remained without contradiction, that marl was abundant at Marr's Bluff, a well known public landing place and ferry on the Peedee, about six miles higher than the last named exposure. But upon examination, not a trace of marl was there seen, though sixty feet or more of perpendicular height is there exposed naked to view. A large proportion of this section consists of the same clay shale above described, which is the underlying stratum of the secondary marl, wherever the latter is found. This remarkable earth agrees, in its texture, smoothness of grain, and other sensible qualities, so nearly with the description of what is called marl in old English books, and according to vulgar and old established opinions derived from such erroneous authorities on this subject, that it is not strange that the shale at Marr's bluff should have so easily as well as falsely acquired the reputation of being excellent marl. Though there is not a particle of carbonate of lime in this thick stratum, I found minute quantities of sulphate of lime, (gypsum,) and also sulphate of alumina, (alum) in powder between some of the laminæ of the shale. This would indicate some source of sulphuric acid in the earth or in the water of the river; which is still more strongly evidenced at Giles' Bluff. Here, on the perpendicular face of the river cliff, of the secondary marl, in spots where sheltered from the rain, the surface is covered by a thin coat of tufted moss, or lichen, growing on the marl; and this moss is delicately and beautifully frosted over by small crystals, which I found to consist principally of sulphate of lime. It was before stated in regard to the Santee marl, from its wasted appearance at the foot of the cliff, that probably the river water acting on it contained sulphurate of iron.

It may not be without interest, or utility, to state that in the very thick exposure of black shale at Marr's bluff, the upper layers are purest and are very pure; and that, as descending, the intervening layers of loose sand, (as described above at Myer's,) became more thick and abundant, and in parts of the section form the greater part. However, the shale still appears in layers of various depths, at irre-

gular intervals to the height of the river—which was then eight feet above ordinary low water.

The height of the Peedee at the time of my examination of its banks in the spring, as in most other cases elsewhere, kept concealed a large part of the section, which was here the more desirable to be known, because of the existing uncertainty whether the hidden lower portion, at different places, consisted of either of the two kinds of marl, or of the shale below both. To be correctly informed in this respect, I again visited the Peedee, as early as possible after frost in autumn, and when the water was low, and commenced a trip by water for its more thorough examination. But the occurrence of bad weather, added to my suffering under ill health, forced me to abandon the attempt, and to entrust it to be made at a subsequent and more favorable time, by Col. J. N. Williams of Darlington, who obliged me, and served the public interest, by making this examination, in the manner that I directed, as far down as Godfrey's ferry. His examination was made at ordinary low water, about eight feet lower than what I saw; and his report thereupon, received after the whole of the foregoing was written, enables me to state of what that lower eight feet consists. He found the Peedee bed (secondary marl) at Birch's ferry to average eighteen feet thick, for the entire length of that long bluff, and exposure. This rested on the usual underlying stratum of black shale, then exposed two feet above the water. At all the exposures below Birch's ferry to Godfrey's, he found marl down to the level of the water. This statement therefore, adds from six to eight feet of thickness of marl, which is accessible and available for use whether of secondary or of miocene, to all that I had before seen, and had described in the foregoing pages.

The Peedee bed is of peculiar character, and very different in appearance from all the other formations in South-Carolina. It occurs in alternate layers of hard marl-stone and soft marl, sundry of which are to be seen in one section. Both these, wherever they under-lie the miocene, and also higher up than the latter extends. are of a dark bluish gray color; and each is of homogenous texture, the marl like an impure clay and the marl-stone like a compact and close-grained hard stone. Lower down the river than any miocene is seen, the upper marl-stone of the secondary or Peedee bed is yellowish. The marl is poor compared to most of those of the great Carolinian bed and to the adjacent miocene usually not more than from 30 to 40 per cent. The marl-stone, however, is rich, varying from 66 to 68, and the little that has been tried, burnt to white and excellent lime. The characteristic fossils, *belemnites* and *exogyra costata*, are not found diffused generally, but are very abundant at particular places, of which the bluff at Birch's Ferry is the best supplied. But this bed is so peculiar and uniform in appearance, that after it has been once identified by the presence of the above fossils, it can as well be known even where they are altogether

absent. The *belemnites* has a straight cylindrical body, sharp to a point at one end, and always broken and showing a hollow interior at the other. Its color is brown, and it is semi-transparent—very hard and brittle, and consists almost entirely of carbonate of lime. The specimens vary from two to five inches in length, and from less than a quarter to nearly half an inch in diameter. The *extogyra costata* is a remarkable bivalve shell, of which one valve is very convex, thick, and ribbed lengthwise and rugged on the outside, and the other valve much smaller, and flat or a little concave. The largest specimens are about five inches in length. By the presence of either of these well marked fossils elsewhere, the secondary formation, and probably also, if in this or the adjacent country, this particular Peedee bed, may be readily and certainly determined.

The banks of the Peedee river present the same remarkable geological feature that has been before mentioned of both the Santee and the Savannah rivers. The western bank is of considerable elevation, and at every bluff, within the limits named, marl is exposed of great but various depths. But the land on the eastern side of the Peedee is very low, opposite the whole region of marl described, and has very few bluffs on the river, and no marl has been heard of on that side.

The Post-pliocene Marl of the Sea-coast.—While engaged last winter in examining the other abundant resources for calcareous manuring, in the beds of recent oyster shells, and of more ancient heaps of the same left by the aboriginal inhabitants, I most unexpectedly found a deposite of marl, though of a different formation and kind from any that I had before seen here or elsewhere, and which had never before been noticed, though probably seen by every resident on the Island of Edisto, where the exposure was first observed. In passing over the bridge on the main road from the village of Eddingsville on the sea-shore, an appearance on the margin of the creek, similar to the common blue miocene marl of Virginia, caught my eye. Upon examination, it was found to be indeed such a marl, in general appearance; but with this difference, that the shells contained, though fossil, seemed to be identical in kind with those of animals now living in the close adjacent ocean, of which the shells are to be seen cast up on the sea-beach. From the formation being discovered in a tide-creek of South Edisto river, and within a few miles of its outlet into the Atlantic ocean, it might be perhaps supposed that the shells were its product, and cast up by the waves of the present ocean. But though the formation in question is manifestly recent in comparison to all other known marls, still it is very ancient compared to such as is now forming in the bottom of the Atlantic, or may possibly be formed of the like in future time on the shore by the dead shells thrown up by present action of the waves. For not only are the existing bounds of the ocean some miles distant from the first discovered locality of this formation, but the bed of marl is also overlaid by the still later

deposite of marsh soil of several feet in thickness, and elsewhere, as subsequently seen, by firm sandy earth. Therefore, it is evident that however new may be this deposite, and as it certainly is in reference to the great geological series of successive formations of marl, or of fossil remains, it is older than both the marshes and the high lands of the islands which rest upon it. This marl is unquestionably of the most recent formation of all which have yet been deposited on the bottom of the ocean, and subsequently upheaved so as to be raised above the surface level of the waters.

The shells of this marl first found near the bridge, (or at least so far as then visible,) are all of small size, or in fragments. The earth intermixed is mostly silicious, and of bluish tint. The mass moderately compact, so as to permit its being dug out in solid lumps, but unusually easy to dig and to crumble. When pointed out and exhibited to residents of the island, it was recognized by several, as similar to what they had seen in other adjacent creeks, emptying, as this does, into the South Edisto river, and from one of these creeks, in the land of Mr. James Seabrook, specimens were subsequently produced, shewing a similar general appearance and like formation, yet different in particular characters. In this, the shells were nearly decomposed, and the marl was much richer in carbonate of lime, and also more compact. Previously I had found it elsewhere in another creek in the neighborhood, of still another description, the shells being much larger, more perfect, and the intermixed earth less compact. This seemed to be a lower part of the bed than the other kinds.

Further examinations enabled me to ascertain the presence of this marl at Distant Island, the land of Mr. Joseph Hazel, which is adjoining Lady's Island, and nearly south from the town of Beaufort, and about four miles distant; and also on Mr. McKee's plantation, on Lady's Island, and about three miles east of Beaufort. To each of these previously unnoticed localities, I directed the attention of individuals by exhibiting the specimens from Edisto, and describing the level and situations at which the marl was likely to be found. By such indications furnished to Mr. Hazel, he found, in the first day, that he had the marl exposed naked and stretching along his beach for several hundred yards. And when I forthwith accompanied him to see this interesting locality, we found further that it extended under the whole beach, concealed from view by merely a thin covering of eight or ten inches of beach sand. The lower part, first seen, was similar to the lowest found in Edisto Island, many of the shells being large. The higher part found under the marl, was formed of shells nearly all small, and, though perfect in form, very rotton and easy to crumble. This deposite is at a place where the water has gained upon the land; and Mr. Hazel remembers when the present beach and the place of the deposite of marl were covered by firm high land, such as now borders it, of eight feet eleva-

tion above high-water. This alone would prove that the deposite is very ancient compared to the existing condition of both the land and water. Since then, Mr. Hazel has found the like marl on other parts of his land, and several other deposites have been found elsewhere by other persons near the coast, of which the most extensive and important is in John's Island, which underlies Doctor's swamp for five miles in length. It was found there and traced by Mr. Sams.

(To be Continued.)

GUANO, OR HUANO.

The following facts relative of the singular properties of this manure, are extracted from a letter recently received by the Editor of the Southern Agriculturist, from his friend in Valparaiso :—

"In your last you reminded me of my promise of sending you a small bag of "Huano," from Peru. I will now state the reason why I did not fulfill it. About the time I received your letter, I had been applying the "Huano" to my garden, which ended in the destruction of it, and so disgusted me, that I did not comply, and threw away what I had; this is now three years; since which I have discovered the cause of its bad effects, which was partly owing to my ignorance in using it. I put a double handful in about a quart of water, and sat it by, after a day or two I thought of the Huano, and found a portion of it disolved and of the color of strong coffee. I poured the liquor on a piece of ground, about eight feet by four feet square, in the back part of my lot, in which were planted a grape-vine, a peach and orange tree, with a few bulbs and flowers; soon after, all my bulbs and flowers and even the weeds disappeared; and now nothing will grow on the spot; where the Huano was put, the grape-vine has not flourished since, and the other trees are stunted.

I now understand they use it in Peru, very sparingly, and that only on ground where irrigation is required; and not in countries where they have rain. It is said that after using it, the practice must be kept up, as the ground will produce nothing without it, for it acts like opium on the human system, that is to say, after once using it, the stimulant is constantly required. I would advise my friends to be cautious how they apply it to any valuable land; and

very sparingly if at all. The Peruvians use it on corn land; at the time of planting, they have the corn in a bag tied round their waist, and the Huano in another; and with the thumb and fore-finger, they take out a pinch and plant it *a few inches from the corn*, then cover the whole and irrigate the land.

I have seen Huano retailed by the peck and half peck at Callio, but never saw the mode of planting, only heard it described, and you observe how little they apply to the ground. The ship Orpheus, Capt. Hill, is to load with 400 tons of Peruvian Huano, which is shipped by a company to the United States; it is better than the Chilian Huano; this will give you an opportunity to try its effects; for you can easily procure it by vessels coming to Charleston.

Yours, &c.

E. L. S.

PROCEEDINGS OF THE BLACK OAK AGRICULTURAL SOCIETY.

The Anniversary meeting was held on the 23rd of April last; a constitutional quorum being present, the following Resolutions were offered by H. W. Ravenel, Esq.

Resolved, That as citizens of the State, and members of an agricultural community, more particularly interested in the late Agricultural Survey, we extend to Mr. Ruffin the expression of our entire satisfaction with the result of his labors among us, and our cordial well-done at the completion of the trust confided to him.

Resolved, That not only in his official connexion with us do we appreciate his devotion to the interest of agriculture, but that in in the Farmer of Coggins' Point, the Editor of the Farmer's Register, and the author of the Essay on Calcareous Manures, we recognize the same untiring zeal, urging both by precept and example, and blending in a happy union, the lights of science with a sound practical judgment.

Resolved, That we present our acknowledgments to Mr. Ruffin for his zealous exertions in pursuing through a period of 25 years, amid many difficulties and discouragements, to a successful issue, a series of experiments on the use of Calcareous Manures, proven by an exhibit of increasing annual production; thus affecting already a revolution in the agricultural condition of lower Virginia, and winning for himself the title of benefactor of his country.

Resolved, That the President be requested to communicate a copy of these resolutions to Mr. Ruffin, and that they be published in the public prints.

The above resolutions were unanimously adopted. The President submitted a communication from the Hon. Whitemarsh B.

Seabrook, inviting the co-operation of this Society in procuring some of the long staple cotton to be sent to China, with a view of introducing its use into that nation, and thereby opening a market for the trade in American cottons of that description.

On motion of Wm. Dubose, it was

Resolved, That the President be directed to purchase two bales of Santee cotton, and transmit the same to W. B. Seabrook, as the contribution of this Society in aid of the object specified in the letter of Mr. Seabrook of the 5th inst.

Resolved, That the President do draw upon the Treasurer for the value of such cotton.

On motion of Dr. Waring,

Resolved, That the Treasurer collect from the members by assessment, the amount of money requisite for the purchase of the cotton referred to in the above resolution.

Dr. John S. Palmer, offered the following resolution which was adopted.

Resolved, That a Committee of three be appointed to inquire into and report forthwith what amount of land has been marled within the geographical limits of this Society, since its last anniversary meeting. Under this resolution the President appointed the following Committee:—Dr. John S. Palmer, H. F. Porcher, and P. C. Kirk.

The Treasurer made his annnal report to the Society of all receipts and expenditure for the past year.

Professor Shepard's Report on the analysis of the cotton-wool and seed, the yam potato, and the Indian corn, made by him by direction of this Society, was presented. On motion, it was accepted and ordered to be printed. (see page 230)

W. M. Porcher then offered the following resolution which was adopted.

Resolved, That Professor C. U. Shepard be appointed Chemist to this Society.

The Society then proceeded to the election of officers for the ensuing year, and the following gentlemen were elected, viz:—

SAMUEL DUBOSE, President.
ISAAC PORCHER, Vice-President.
H. W. RAVENEL, Secretary & Treasurer.

Dr. John S. Palmer from the Committee named above, made the following report:

The Committee appointed to inquire what amount of land has been marled within the geographical limits of this Society, since the last anniversary meeting, beg leave to report—that they have ascertained with certainty, that upwards of 1200 acres have been marled in the past year, and that there are several places known to have had marl applied to them largely, of the actual amount of which your Committee have no means of ascertaining immediately.

The following is the amount of marling done at each place respectively, viz :—At Buck Hall, 5 acres ; South Mulberry 10; Hickory Hill, 40; Ward's, 30; Moorfield 50; Chapel Hill, 108; Ophir, 74; White Hall, 64; Cedar Spring, 18; Goshen, 35; Brunswick, 20; Hanover, 50; Harbin, 35; Pond Bluff, Jippy, 20; Somerset, 80; Fair Spring, 7; Northampton, 2; Mt. Moriah, 225, Ball's Dam, 104; Woodstock, 18; Rocks; Somerton, 40; Wood Lawn, 15; Walnut Grove, 55; Black Branch; Walworth, 60; Loch Dhu, 42; Cedar Grove, 5; total, 1113 acres.

JOHN S. PALMER, *Chairman.*

The Society then took a recess to enable the inspecting Committee to examine the objects offered for exhibition, and to award the premiums. After due examination, the Committee entered and made the following report :—

For the best Brood Mare, Col. McKelvey's Bay Mare, from Fairfield, Premium.
H. F. Porcher's Brown Mare, Nancy Dawson.
Col. Carson's Grey Mare, Amey, by Eagle, out of a Mambrino Mare.

For the best Colt, Mr. Haselden's Anette, by Lafayette, - "
Mr. Deveaux's filly by Trident, out of a Stamboul Mare.

For the best Mule, S. W. Porcher's Mare Mule by Don Juan, - "
W. M. Porcher's 2 Mules.
S. W. Porcher, 1 Mule.
Isaac Porcher, 1 Mule.

For the best Yoke of Oxen, W. M. Porcher, 1 Yoke Oxen, Boston and Davy, - - - - - - - - - - - - "
S .W. Peyre, 1 Yoke Oxen, Ranger and Traveller.

For the best Sheep, F. A. Porcher, a Ram, half broad tail, - - "

For the best Boar, F. A. Porcher's Boar, Tom, 7 months old, - - "
F. A. Porcher's Berkshire Boar, Bob, 15 months old.

For the best Sow, H. F. Porcher's Susey, 6 months old, (Woburn and Berkshire,) - - - - - - - - "
F. A. Porcher's Sue, 7 months old.
S. W. Peyre, 2 Sows, Warp and Whoof, (Woburn and Berkshire,) "

For the best Specimen of Wool and Cotton Cloth, Dr. J. S. Palmer, "

For the best specimen of Cloth, (all Cotton,) S. G. Deveaux, - "

The above report was accepted.

On motion of Dr. Waring, it was

Resolved, That the Committee on Premiums be authorized to purchase a die for the casting of the medals to be awarded by the Society.

On motion of W. M. Porcher, the following were added to the list of objects for which premiums shall be offered, viz.—

For the greatest production of Corn, made upon 5 acres of highland. Do. of Cotton. Do. of Rice. Do. of Potatoes upon one acre. The Society then adjourned.

H. W. RAVENEL, *Secretary & Treasurer.*

REPORT OF AN ANALYSIS OF COTTON-WOOL, COTTON SEED, INDIAN CORN, AND THE YAM POTATO, MADE FOR THE BLACK OAK AGRICULTURAL SOCIETY, BY C. U. SHEPARD.

1*st Cotton-Wool.*

ONE hundred parts by weight of cotton-wool on being heated in a platina crucible, so long as a brightly burning gas continued to be emitted, lost 86.09 parts—the residuum being a perfectly charred cotton, which, on being ignited under a muffle until every particle of carbon was consumed, lost 12.985, and left an almost purely white ash, whose weight was rather under 1 p. c. or, 0.9247. Of this ash, about 44 p. c. was found to be soluble in water. It contained 12.88 p. c. of silicious sand, which must have been acquired adventitiously in the process of harvesting the fibre. Deducting the sand from the ash, the constitution of the latter is as follows:—

Carbonate of Potassa (with possible traces of Soda,) -	44.19
Phospate of Lime with traces of Magnesia, - -	25.44
Carbonate of Lime, - - - - -	8.87
Carbonate of Magnesia, - - - -	6.85
Silica, - - - - - - - -	4.12
Alumina (probably accidental,) - - -	1.40
Sulphate of Potassa, - - - - -	2.70
Chloride of Potassium, Choloride of Magnesium, Sulphate of Lime, Phosphate Potassa, Oxide Iron in minute traces, } and loss, - -	6.43
	100.00

But since it is obvious that the carbonic acid in the above mentioned salts must have been derived during the incineration of the cotton, the following view will more certainly express the important mineral ingredients abstracted by the cotton from the soil for every 100 parts of its ash.

Potassa (with possible traces of Soda,) -	31.09
Lime, - - - - - -	17.05
Magnesia, - - - - -	3.26
Phosphoric Acid, - - - -	12.30
Sulphuric Acid, - - - -	1.22
	64.92

For every 10,000 lbs. of cotton wool, then, about 60 lbs. of the above mentioned ingredients are substracted from the soil in the proportion indicated by the numbers appended, i. e. omitting fractions.

Potassa, - - - - -	31 pounds.
Lime, - - - - -	17
Magnesia, - - - - -	3
Phosphoric Acid, - - - -	12
Sulphuric Acid, - - - -	1

Several queries were submitted to me along with the sample to be analyzed, relative to the effect of soils on cotton. I regret to state that the almost total ignorance in which we are still left respecting the composition of the varieties of this fibre, and the soils producing them prevents me from hazarding any explanations on the subject. This is the first destructive analysis ever made (at least so far as my knowledge extends,) of the cotton-wool. Nor am I acquainted with the properties of the soil which afforded it. Prior to any deductions, it is clear we must know the composition of each variety of cotton, as well as that of the soil it affects. At present I can only venture on connecting together two facts, which which appear to occupy important relations to one another. The soil of St. Stephen's, which is said by F. A. Porcher, Esq., to be a stiff clayey loam, produces the strongest and finest fibre of the Santee varieties. The Sea-Island qualities are supposed to owe their superiority to the use of marsh-mud, which I have ascertained to be a clayey admixture, rich in alkalies and alkaline earths. Whether the similarity between these two staples is influenced most (if it is affected at all,) by the chemical or mechanical qualities of the soils producing them, it is impossible to decide. It is also conceivable that the two sets of qualities may conspire to one and the same end.

2nd—Cotton-Seed.

One hundred parts, heated as above, lost 77.475, and the thoroughly charred residuum burned under the muffle, left 3.856 parts of a perfectly white ash. The composition was found to be as follows:

Phosphate of Lime (with traces of Magnesia,)	61.64
Phosphate of Potassa (with traces of Soda,)	31.61
Sulphate of Potassa,	2.55
Silica,	1.74
Carbonate of Lime,	0.41
Carbonate of Magnesia,	26
Chloride of Potassium,	25
Carbonate of Potassa, Sulphate of Lime, Sulphate of Magnesia, Alumina & oxides of iron & manganese in traces & loss,	1.64
	100.00

In comparing the above table with that afforded by the cotton-wool, a marked dissimilarity presents itself. The ash of the cotton seed is fourfold that of the fibre; while the former has also treble the phosphoric acid possessed by the latter, as will the more clearly appear, when we present the analysis under another form, corresponding with the second table under cotton-wool.

Phosphoric Acid,	45.35
Lime,	29.79
Potassa,	19.40
Sulphuric Acid,	1.16
	95.70

From the foregoing analysis it would appear difficult to imagine a vegetable compound, better adapted for fertilizing land, than the cotton seed; nor can we any longer be surprised at the well known fact, that soils long cropped with this staple, without a return to them of the inorganic matters withdrawn in the seed, become completely exhausted and unproductive.

3rd—Indian-Corn.

One hundred parts heated to redness in a crucible, so long as a brightly burning flame was emitted, lost 81.05 parts. The completely charred residuum on being ignited beneath a muffle, upon a platina foil, until all the carbon was consumed, left 0.95 parts, or less than 1 per cent. of an easily flowing clear glass. This ash has the following composition:—

Silica,	38.45
Potassa, (with traces of Soda)	19.51
Phosphate of Lime,	17.17
Phosphate of Magnesia,	13.83
Phosphate of Potassa,	2.24
Carb. Lime,	2.50
Carb. Magnesia,	2.16
Sulphate of Lime, Sulphate of Magnesia,	.79
Silica mechanically present,	1.70
Alumni, traces,	
Loss,	1.65
	100.00

Omitting the Silica as an unimportant loss to the soil, and the Carbonic acid which is a product of the analysis, we have in every 100 parts of the ash of the Indian corn, the following important inorganic constituents:—

Potassa,	20.87
Phosphoric Acid,	18.80
Lime,	9.72
Magnesia,	5.76
	55.15

That is to say, for every 1000 pounds of Indian corn sold from an estate, the land is robbed of 9½ lbs. inorganic matter, whereof about 5½ lbs. consist of principles of prime value to all species of crops.*

* In a recent number of the Boston Journal of Natural History, I observe some observations by Dr. Charles T. Jackson, on the inorganic constitution of Indian corn, wherein Dr. J. supposes phosphoric acid to be present in the grain, in a free or uncombined state. The experiment which led him to form this conjecture, did by no means succeed in my hands as described by him; for although the grain was repeatedly incinerated upon a bright platina foil under muffer, still the metal lost none of its polish or malleability. Neither can I agree with Dr. J. in his opinion of the presence of ammonia as a base in Indian corn, the volatile alkali obtained by him, being a product rather than an educt of the analysis.

4th—Sweet Potato, (Yam.)

The tubers analyzed, though fresh from the market, were obviously drier than when first harvested.

One hundred parts of the thinly sliced tubers on being thoroughly dried at a temperature of 200°, lost 58.97 per cent. of water.

One hundred parts of the undried potato gave 1.09 parts, or rather over 1 per cent. of a whitish ash stained in points of a bluish green color.

Its composition was as follows:—

Carbonate of Potassa, (with traces of Soda)	-	60.00
Phosphate of Lime,	-	14.57
Phosphate of Magnesia,	-	5.60
Carbonate of Lime,	-	5.39
Carbonate of Magnesia,	-	3.80
Chloride of Potassium,	-	4.60
Sulphate of Potassa,	-	4.35
Silica,	-	70
Chloride of Calcium, Sulphate of Magnesia and Lime, Alumina, Oxides of Iron and manganese in traces, } and loss,	-	99
		100.00

One hundred parts of the ash from the sweet potato tuber, contains then the following inorganic principles which must have been withdrawn from the soil.

Potassa,	43.59
Phosphoric Acid,	11.08
Lime,	10.12
Magnesia,	3.80
Potassium,	2.42
Chlorine,	2.18
Sulphuric Acid,	1.90
	85.09

Tabular view of some of the foregoing results.

	In Cotton-Wool.	Cotton-seed.	Indian Corn.	Potato.
Weight of Ash,	0.9247 p. c.	3.856 p. c.	0.95 p. c.	1.09 p. c.

Essential inorganic ingredients absorbed from the soil.

	By Cotton-wool.	Cotton-seed.	Indian Corn.	Potato.
Potassa,	31.09	19.40	20.87	43.59
Lime,	17.05	29.79	9.72	10.12
Magnesia,	3.26	trace	5.76	3.80
Phosphoric Acid,	12.30	45.35	18.80	11.08
Sulphuric Acid,	1.12	1.16	trace	1.90
Chlorine,	traces	traces	——	2.18
Potassium,	——	——	——	2.42

One thousand pounds of each crop give of inorganic ingredients, of the 1st, 9½ lbs.; 2d, 38½ lbs.; 3d, 9½ lbs.; and of the 4th, 10 9-10 lbs.

The proportions of inorganic matter that may be regarded as most important, are—In the 1st, 64-100; in the 2d, 95-100; in the 3d, 55-100; in the 4th, 85-100 lbs.

If equal weights of cotton-wool and Indian corn be taken from the same area of land, the deterioration to the soil in inorganic principles should be nearly the same. The yam, if compared with either of these crops, would appear to rob the soil of a still heavier weight of saline matter, although it is noticeable that the proportion of phosphoric acid abstracted by it is considerably less, and that no portion of it is thus withdrawn in the condition of phosphate of potassa.

Finally.—Under the same weights, the cotton seed removes about four times as much of these ingredients as the yam, and six times the quantity that passes off by the cotton-wool, or the Indian corn. Moreover, the proportion of phosphoric acid (the most valued mineral constituent of a soil,) in the cotton seed is nearly double that in Indian corn, and treble that in cotton-wool and the yam; whereby the inestimable qualities of the cotton seed as a fertilizer, becomes still further apparent.

—

The following letter from Prof. SHEPARD to F. A. Porcher, Esq. has been communicated for publication since the foregoing report.

Charleston, April 22d, 1844.

To FREDERICK A. PORCHER, Esq.

Dear Sir,—I thank you for calling my attention to the analysis of Sea-Island cotton-wool, by Dr. Ure, as quoted in the valuable Memoir on Cotton by the Hon. W. Seabrook. It is the first notice I ever had of any chemical examination besides my own, of the ash of cotton-wool, and it is proper that I should submit a few remarks to your Society respecting the different results arrived at in the two cases.

If the example analyzed by Dr. Ure, was a fair one, of which I confess I entertain some doubts, several discrepancies would appear to exist between the two varieties examined. Before alluding to these, however, I beg leave to state, that in my analysis, both of the wool and of the seed, I contented myself with the determination of the proportion of the phosphates, without establishing rigorously the ratio of the magnesia to the lime; neither did my analysis give by itself the chloride of potassium, (muriate of potash.) Yet I am able to add, from a recurrence to my notes, that this compound fell short of 3 per cent. I am greatly surprised, however, to find the oxide of iron so high in the Sea-Island variety, since in that of the Santee it cannot equal half a part in one hundred. Should the absence of carbonate of magnesia in the Sea-Island variety be verified, and the extraordinary content in the latter of chlorine and sulphu-

ric acid be established, the inorganic difference between the two staples, will, to say the least, be as remarkable as those existing in their physical qualities.

Comparative Statement.

TABLE I.

	Sea-Island.	Santee.
Earthty Phosphates - - -	17.4	25.44
Carbonate of Lime, - - -	10.6	8.87
Carbonate of Magnesia, - - -	0.0	6.85
Chloride of Potassium, (muriate of potash,)	9.9	3.00 ?
Sulphate of Potassa, - - -	9.3	2.70
Silica, - - - - -	0.0	4.12
Peroxide of Iron, - - -	3.0	0.50 ?

TABLE II.

In this table the acids are separated from their bases, and the carbonic acid is omitted.

	Sea-Island.		Santee.
Potassa, - -	35.24		31.09
Lime, - -	10.28		17.05
Magnesia, - -	3.20		3.26
Potassium, - -	5.70		1.50 ?
Phosphoric Acid, -	9.84		12.30
Sulphuric Acid, -	4.75		1.22
Chlorine, - -	4.20		1.50 ?
Peroxide of Iron, -	3.00	less than	0.50
Silica, - -	0.00		4.12
Phosphate of Potassa, -	00		1.50 ?
	76.11		73.99

Very respectfully, yours,
CHARLES U. SHEPARD.

IMPROVEMENT OF CLAY SOILS.

MESSRS EDITORS,—What method shall I take to reclaim worn-out land? soil, stubborn clay. Will leached ashes or lime effect a cure? If so, what proportion to the acre?

E. H. NORTHRUP.

Shoreham, Vt. April 5, 1844.

The great trouble with a clay soil, is its tenacity. The compactness of its particles, keeps, in wet weather, too much water on the surface; and in dry weather it 'bakes,' as we say—becomes so hard that it absorbs but little moisture, and cannot be penetrated by the roots of plants. Thus, on clay soils, vegetation is very likely to suffer in turns, both from an excess, and a deficiency of moisture.

To guard against these difficulties, the first object should be to break this obstinate tenacity by a thorough loosening. To keep the vegetable matters near the surface, where, especially on such soils, they are most effective in aiding the growth of plants, we would turn a rather thin furrow with the common plough, and follow with a sub-soil plough, running it as deep as the implement and the strength of the team would permit. This would allow the surplus water to pass readily into the earth—the roots of plants would easily find their way in search of food—while, in time of drouth, the exhalation of moisture from below, as well as its absorption from the atmosphere would be facilitated, and the growing crop would thus be protected from the evils of too much moisture at one time, and too little at another.

As to the kinds of manure to be used, we should endeavor to apply such as would tend to correct, as much as possible, the defects of the soil. From our own experience, we should not expect much benefit from the use of ashes—their effects are more favorable on sandy soils. We would try both lime and gypsum, and if their effects proved to be such as would render their application profitable, should use such quantities as seemed expedient. We should endeavor to induce the growth of clover, and if that crop could be made to flourish, it would be found a certain and great improver of the soil; and should gypsum operate well, a high degree of fertility might be gained by the use of that substance in connexion with clover. Animal manures of all kinds, if they can be had, should of course be applied, as they are valuable on soils; and if there was a chance to obtain saw-dust conveniently, and at small expense, we would use it liberally, having witnessed its effects in improving tenacious soils.

It is proper to observe, that if draining should be necessary, that should be the first object of attention. The loosening of the soil as above mentioned, will operate as a considerable drainage; but actual observation only can determine whether it will be sufficient. [*Albany Cultivator.*

EXPERIMENTS.

Well conducted experiments are of the greatest service to the cause of agriculture. Some of the most important improvements yet made, have resulted from experiments made with care, and directed with skill. Great means are not required to institute useful experiments; the most humble tiller of the soil may contribute his part, and frequently such have rendered more aid to the progress of farming than the rich. Let every farmer then select some subject important in itself, and capable of general application, and enter upon its prosecution with a determination to give it a fair trial, to ascertain the expense, the profits, the best mode of culture or treatment, and as far as he is able, settle that question not only

for himself, but for the public. The farmer should allow no year to pass, without prosecuting investigations of this kind; and if properly conducted, he will soon have a mass of facts accumulated, having a direct bearing upon his soil, crops, culture, manures, and general management of his farm, of the greatest practical value.

[*Albany Cultivator.*

COTTON GIN—INQUIRY.

A correspondent at "Ometepe, Republic of Central America," H. Woniger, Esq., makes the following inquiries, and we shall be greatly obliged, if some of our Southern friends will furnish us with the information asked for:—"I read in the July No. 1842, of your interesting paper, an article, dated from Demopolis, Ala., and signed 'I. B. C.' in which the writer states that in that place, a gin for cleaning cotton has been invented on the roller principle, which he says is thought will supercede the saw-gin. As I cultivate the long-staple cotton, known as Sea-Island, it is interesting to me to know wether this machine answered its purpose, where manufactured, and at what price. As yet, I have not seen any farther communication respecting this invention, unless it be published in those late numbers of your paper, which on account of the great distance, cannot have reached me. I beg you to have the goodness to give me all the information you can; and also wish to inquire if you know of any machine that is made use of by growers of Sea-Island cotton for the purpose of gining, other than the common roller-gin propelled by the foot of the man who attends it." *

[*Albany Cultivator.*

USE OF GRAPES.

Dr. Underhill strongly advises the culture of grapes, both on account of the profit to be derived from the sale of them, and from their value as food to sick and convalescent persons. At a late meeting of the New-York Farmer's Club, Dr. U. made some highly valuable observations on this subject. After fifteen years trial with various kinds of grapes, he prefers some of our natives, and recommends the Catawba and Isabella. He has three acres of the former, and seventeen of the latter. He says our people eat too much animal food, which renders their blood too thick, and causes diseases of the heart, liver and lungs. He thinks it would be infinitely better to substitute grapes and other fruit, with a little pure wine, for a portion of animal food.

[*Albany Cultivator.*

---

* See April and May Numbers of the Southern Agriculturist for a description of M'Carthy's Gin.

PROTECTION AGAINST DROUGHT.

Mr. Wood,—The severe drought this summer has destroyed a great many young trees in this city—some even that had been planted several years. This is a serious evil, and much greater than the loss of a portion of our garden vegetables, or shortening the crop of potatoes and grass; because the latter may be produced another year, whilst many years and much care are necessary to repair the loss of trees of any considerable growth; and it is, therefore, an inquiry of interest to every one who has a young tree, how he may protect it in a season of drought. The method which I have practiced *with unfailing success* for several years may be new to *some* of your readers, and I will, therefore, relate it. In the summer, when there has been no rain for some time, and vegetables begin to droop, I put a coat of *ground tanner's bark*, or *tan*, (as it is called,) about the trunk of my young trees, from eighteen inches to three feet in diameter, and two or three inches thick; and if the drought continues long, I wet the tan occasionally —perhaps once in ten or twelve days. The tan prevents the rapid evaporation of moisture from the ground, and the soil beneath it will remain moist and light if not wet for two or three weeks. I set out fourteen elms about my lot in a very sandy soil in April last, and in June, on the first appearance of drought, I put some tan about them, which I wet but once afterwards; the trees have grown finely the whole time, and now look better than any I have seen which were planted this year.

My garden is situated on high ground, without the protection from wind or sun from any quarter, and naturally a very thin and sandy soil; and yet I have not in four years lost a tree *from drought*, out of a large number planted every year, having protected them in this matter. The trees and shrubs in the in the burying ground have been preserved through the drought by watering and cutting the grass and putting it about them. This is a very effectual protection but attended with more trouble than my method, as they require watering much oftener. A nurseryman near Boston, once said to me, "*never water a tree after it is planted out.*" This rule will not always answer in our soil, if it does in Boston; but many trees are certainly injured by improper watering, and I should, therefore, say, *when you water a tree put something about it to check evaporation and keep the ground from "baking,"* and in my opinion *tan* is the best material for that purpose. I have also put tan about strawberry plants newly set out, with decided advantage—not only protecting them in dry weather, but keeping the fruit clean and preventing them from being "winter killed." The only objection which I know to its use on strawberry beds, is that it prevents many of its runners from taking root. This, with rare kinds which it is desired to increase rapidly, is an objection to covering the whole space between the plants, but it may be obviated by putting it a few inches about each plant, leaving the remainder of the

ground uncovered. I set out a large bed with about two hundred of Hovey's seedlings in August and September last, with tan about them, and did not loose a single plant. They were *every one* in fine order in the spring, and did not even wilt during the severe drought this summer, although they were not watered at all.

Yours respectfully,

S. D. P.

New Haven, Aug. 11, 1843, [*Farmer's Gazette.*

PEACH TREES.

To the Editors of the Louisville Journal:

Gentleman,—I recollect seeing a short time ago, in some paper, an article about peach trees, recommending to cut them down or dig them up, when effected with the *yellows*; this prescription is like cutting the throat of a sick animal, fearing lest it should die of the disease. If the cause of the yellows is removed, and the sick animal cured by proper remedies, natural health is restored to each.

The only enemy of the peach tree, as I believe, is a small whitish worm with a brown head, about an inch and a quarter long.—Destroy the worm in any way you may, and the health of the tree is restored.

I have some Heath peach trees, obtained from Mr. Wm. Morton, of Lexington, Kentucky, now more than twenty years old; from neglect, they occasionally have the *yellows*, but destroy their enemy, and the health of the tree is restored. Scoop the earth from about the root of the tree, so as to form a bowl eight or nine inches deep; the tree in the centre; the out edges of the bowl to be eighteen to twenty-four inches from the tree; do this about the first of September; let it remain so until the first of December; then fill the bowl level with wood ashes; I have used leached ashes with uniform success; I have no doubt that lime will do as well or better than ashes. By exposing the roots to the sun and air, the propagation of the worm is checked, it gives birds (particularly a kind of woodpecker or sap-sucker) a chance to peck them out. If the first attempt does not relieve the tree, repeat it; search for the worms and destroy them or the tree cannot flourish. My old trees are as healthy at this time as young trees can be, and if next year be a good year for fruit, they will no doubt yield abundantly.

Your obedient servant,

LEWIS SANDERS.

Grass Hills, Ky., Nov. 10, 1843.

In cultivating the earth, the condition of man's success is his industry upon it.

EFFICACY OF BATHING IN CERTAIN MORBID STATES OF THE MIND.

Judging from the beneficial effects of cold and warm water bathing in case of mental irritation caused by cerebral disease, I should feel disposed to consider that the steady use of these remedial agents would, in incipient derangement of the mind, be accompanied by the happiest results. It is much to be lamented that the practice of regular systematic bathing is not recommended and adopted in this country. The state of the mind is closely dependent upon the condition of the cutaneous secretion. I would advise those who are subject to mental depression, hypochondriasm, vapors, ennui, or by whatever term it may be designated, to try the effect of bathing. I feel assured that in many cases violent attacks of insanity may be warded off by the use of the warm or cold bath. In cerebral irritation, evidently the result of vascular excitement, bathing the head regularly every morning with cold water, or vinegar and water, will be found highly serviceable.

F. Winslow's Health of Body and Mind.

NEW MODE OF PROPAGATING FRUIT TREES.

The New Hampshire Whig says, "Two of the best farmers within our knowledge secure their fruit trees thus: they dig at some distance from the body of a favorite tree until they find a root, which they cut off. The part disjointed from the tree is turned up so as to appear above ground. This sends forth shoots the first season, and bears in a few years fruit precisely like the parent tree. Let those whose trees are decaying, or who wish to increase good varieties, try the experiment."

THE CHICKEN HATCHING MACHINE.

The chicken hatching machine is now in successful operation in New-York. About fifty chickens are brought forth daily, or 20,000 per annum. A remarkable fact is stated in regard to weight of chickens when they first come from the egg; the chicken being several ounces heavier than the egg was at first.

[*Albany Cultivator.*

SCOTCH GUANO.

A plentiful deposit of this rich manure, it is reported, is found on some of the northern islands of Scotland, which will probably supercede that hitherto brought from the Pacific. [*ibid.*